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EXAMINER

EDWARDS, PATRICK L

ART UNIT PAPER NUMBER

2621

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

GM

Office Action Summary

Application No.

09/677,227

Applicant(s)

NAJAND, SHAHRIAR

Examiner

Patrick L Edwards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

2. The abstract of the disclosure is objected to because it compares the invention with the prior art (lines 4-5 and 8-10). Correction is required. See MPEP § 608.01(b).

3. The disclosure is objected to because of the informalities listed in paragraph 4.

Appropriate correction is required.

4. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph.

Examples of some unclear, inexact or verbose terms used in the specification are listed below:

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An apparent contradiction exists in the related art section of the application (page 1, lines 13-17). It appears as if the first two sentences in this section contradict each other. This is more than likely due to a missing word or phrase, but correction is nonetheless required.

The final sentence in page 2 of the application is grammatically incorrect. Perhaps the word "be" should be inserted in between the words "fact" and "captured".

The second sentence of page 8 of the application is grammatically incorrect. This sentence would make sense if the word "likes" (line 3) was replaced with the word "like".

The last sentence in page 11 of the application (lines 20-22) does not make grammatical sense. Perhaps the word "time" on the last line of the page should be pluralized.

In the detailed description section of the application, the term "B1" is unclearly defined and the terms 'b1m, b2m,...b9m' are given neither a definition nor a clear explanation. On page 11 lines 4-6 of the application, two equations are given for the term "B1". It is impossible to tell whether or not these equations are mathematically equivalent without an equation or clear explanation for the terms 'b1m,b2m,...b9m'. It follows that any equation in the application that uses these terms is also considered unclear. Appropriate correction for all of these unclear terms is required.

In the detailed description of the invention, it is stated that, "after several passes the cross talk correction converges." (page 12, line 1) The word "several" in this sentence is vague and indefinite and needs to be appropriately corrected.

The sentence that spans lines 13-14 on page 17 of the application is grammatically incorrect and makes no sense. Inserting the word "read" in between the words "previously" and "line" is one possible way to correct this sentence.

On page 17 line 12 of the application it is unclear which line the term "this line" is referring to. Appropriate correction in the form of clarification of the term "this line" is required.

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The detailed description of the invention states that, "These additional pixels along the predetermined trajectory are most likely being cross talk corrected a 2nd, 3rd, etc. time, i.e., an Nth time." (page 18, lines 1-2) This sentence is vague, indefinite and inexact as a result of the phrase "most likely being". Correction is required in order to make this sentence more determinate.

Although the variable "M" is repeatedly used on pages 23-24 of the application, it is never explicitly stated what variable "M" corresponds to. Proper clarification of all variables is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 4, 8, 9, 10, 14, 15, 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maurice (US Patent 5,493,553) in view of Koike (US Patent 5,572,603). With regard to claim 16, Maurice discloses a method of cross talk correcting a first signal, (xj), (this signal being analogous to a pixel in the present application) contained within a first track, (j), (this track being analogous to a line comprising a plurality of pixels in the present application). (Maurice column 3 lines 20-21) Maurice also discloses that said first signal is cross talk corrected using a second signal (xj-1) contained within a second track (j-1). (Maurice column 3 lines 22-23), and a third signal (xj+1) contained within a third track (j+1). Maurice, however, fails to disclose a method that receives a second track of signals to perform cross talk correction on the first pixel while performing cross talk correction on the first signal. Nevertheless, Maurice clearly teaches two discrete computations, one consisting of the product of the first signal by the sign of the second signal and the other consisting of the product of the first signal by the sign of the third signal. Clearly, the different lines of data may be introduced in a serial fashion as taught

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in Koike, for example. Koike discloses a system that receives a second line of data (VD) while a first line (VDa) of data is being processed and said second line is used to process the first line. (Koike column 11 lines 49-63 in conjunction with Figure 4)

It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Maurice's cross talk correction method by using line buffers as taught by Koike in order to apply cross talk correction to a portion of the digital image comprised of three tracks, (j, j+1, j-1), (or three lines of pixels). Such a modification would have allowed for cross talk correction that could be implemented in Maurice's system while reading the tracks of image data from a disk and would allow for the reception of a second line of signals while performing correction of the first signal. It would also allow for the reception of a second line of signals while performing correction of the first signal.

With regard to claim 1, which is representative of claims 8, 9 and 10, Maurice discloses a method for cross talk correction using three tracks of signals but does not disclose an apparatus for performing said method. Koike discloses an image processing method that sends a scanned line (produced by a scanning unit (Koike column 11 lines 39) analogous to an image sensor circuitry) of pixels, VD, to a matrix register (3) for processing (which is performed by a processing unit or processing circuitry (Koike column 3 line 66) and a first line buffer (which can be assumed is part of a line buffer circuitry) (4) for storing. (Koike column 11 lines 49-54 corresponding to Figure 4) Said first line buffer outputs its pixels to the matrix register for processing and the second line buffer (5) for storage. These first line buffer outputs, VDa, correspond to one scanning line prior to the VD pixels. (Koike column 11 lines 56-58 corresponding to Figure 4) The second line buffer output pixels, VDb, only go to the matrix register for processing and correspond to one scan line prior to the VDa signals (two scan lines prior to the VD signals). (Koike column 11 lines 61-63 corresponding to Figure 4) This embodiment clearly shows a method where a third line of pixels (in relation to our first line of pixels) is received from our image

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sensor circuitry. It also discloses a system containing all of the circuitry elements disclosed in the application.

It would have been obvious to one reasonably skilled in the art at the time of the invention to apply the apparatus and method of Koike to Maurice's cross talk correction method. Such a modification would take advantage of the increased modularity and reduced hardware overhead inherent with the use of line buffers as opposed to the use of larger hardware storage solutions such as frame buffers.

With respect to claim 14, it is explicitly stated in Maurice that a third signal (x_{j+1}) contained within a third track ($j+1$) contained within a third track is used to perform cross talk correction on a first signal (x_j) contained within a first track (j). (Maurice column 3 lines 9-14)

With respect to claim 15, Koike discloses a system with two line buffers (Figure 4) in which a second line (VDa) in relation to a first line (VD) is contained within the first line buffer (4), and a third line (VDb) in relation to a first line (VD) is contained within a second line buffer (5). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Maurice's three track cross talk correction method to include the Koike's method of using line buffers for storing lines of pixels. Such a modification would have allowed for a cross talk correction method that corrects the pixels as they are scanned in. Thereby, reducing the memory required for the operation.

With respect to claim 4, which is representative of claim 20, it is further added that the first pixel, second pixel and third pixel are aligned along a predetermined trajectory within the plurality of pixels of the digital image. Maurice discloses a method that looks at tracks (j), ($j-1$), ($j+1$) and acquires signals (x_j), (x_{j-1}), (x_{j+1}). These signals, which lie on parallel tracks or lines of data are aligned on a diagonal trajectory based on their location in their track with respect to the other signals in their respective tracks.

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Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 2-7, 11-13, 17-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

With respect to claim 2, it is disclosed that cross talk correction is to be performed on a third pixel within a third plurality of pixels after cross talk correction is performed on the first pixel. This disclosure does not appear to be in accord with the description of the invention given in the specification and drawings. Specifically, Figs 5(A-D) show a situation where pixels are being corrected on a pixel-by-pixel line-by-line basis. The language of claim 2, however, suggests that a second line of pixels is overlooked and not cross-talk corrected.

With respect to claims 3 and 5, it is disclosed in claim 3 that “the fourth line is received from a third line buffer contained within the line buffer circuitry.” Claim 5, however, states that “the fourth line is received from a fourth line buffer contained within the line buffer circuitry.” More explanation on why these two apparently contradictory states can both occur in this invention and what particular embodiments these situations correspond to.

With respect to claim 3 only, it is disclosed that a subset of the second line and a subset of the fourth line comprise a cross talk correction grid within the plurality of pixels. There is not enough explanation in the specification to allow someone reasonably skilled in the art to understand why the cross talk correction grid that performs cross talk correction on a first pixel contained in a first line consist of a

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subset of the second and fourth lines. In addition, there is no explanation as to which subset of the second and fourth lines is used or how one reasonably skilled in the art determines the subset. There is also some ambiguity involved in the mention of the “plurality of pixels” in the last line of claim 3. It isn’t clear whether said plurality of pixels is referring to the plurality of pixels mentioned previously in the claim or the general plurality of pixels that make up the digital image.

With respect to claim 4 and 6, it is disclosed in claim 4 that “the first pixel, the second pixel and a third pixel within the third plurality of pixels are aligned along a predetermined trajectory.” After reading the claim it is unclear why the third pixel is the only pixel that is explicitly stated to be contained within its respective plurality of pixels. The wording of the claim does not make it clear to the reader which plurality of pixels the first pixel and second pixel reside in. This same lack of clarity applies to claim 6.

With respect to claim 11, it is disclosed that multi-pass cross talk correction is performed on a third pixel contained in a third line while cross talk correction is performed on a first pixel in a first line. It is unclear why cross talk correction of a first pixel in a first line would occur simultaneously with multi-pass cross talk correction of a third pixel in a third line. It is also unclear why the processor would be receiving the second line from the line buffer circuitry at this time. The information given in the specification and drawings (specifically, Figs 5(A-D)) show a situation where the processor needs the second line of pixel data in order to perform cross talk correction on a first pixel in a first line. There is not enough information presented in the disclosure to allow someone reasonably skilled in the art to fully understand the proposed embodiment.

With respect to claim 12 it is disclosed that a subset of the first line and a subset of the third line comprise a cross talk correction grid within the plurality of pixels. There is no explanation as to which subset of the first and third lines is used or how one reasonably skilled in the art determines the subset. There is also some ambiguity involved in the mention of the “plurality of pixels” in the last line of claim

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12. It isn't clear whether said plurality of pixels is referring to the plurality of pixels mentioned previously in the claim or the general plurality of pixels that make up the digital image.

With respect to claims 13 and 18 it is disclosed in claim 13 that multi-pass cross talk correction is performed on a third pixel contained within a third line using the first cross talk corrected pixel. This occurs after a second line is used to perform cross talk correction on a first line (claim 8). There is no mention, however, of performing cross talk correction on a second pixel contained within a second line. Referring back to Figs 5(A-D), it is shown that pixels are cross talk corrected pixel-by-pixel and line-by-line. With this embodiment, it is necessary to cross talk correct a second line before cross talk correcting a third line. With no mention being made of cross talk correcting a second line, it is unclear how a third pixel in a third line is cross talk corrected. This same argument applies to claim 18.

With respect to claim 17 it is disclosed that a subset of the second line and a subset of the third line comprise a cross talk correction grid within the plurality of pixels. There is not enough explanation in the specification to allow someone reasonably skilled in the art to understand why the cross talk correction grid that performs cross talk correction on a first pixel contained in a first line consists of a subset of the second and third lines. There is no explanation as to which subset of the first and third lines is used or how one reasonably skilled in the art determines the subset. There is also some ambiguity involved in the mention of the "plurality of pixels" in the last line of claim 17. It isn't clear whether said plurality of pixels is referring to the plurality of pixels mentioned previously in the claim or the general plurality of pixels that make up the digital image. It is also claimed that a third pixel in a third line is used to generate the first cross talk corrected pixel. There is not explanation as to why a third pixel in a third line is necessary to generate a first cross talk corrected pixel in the first line. The specification and Figs 5(A-D) show that a pixel is cross talk corrected with respect to the pixels adjacent to it. If a third pixel in a third line is necessary to generate a first cross talk corrected pixel in the first pixel of the first line, then

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this is not the purely the case. Not enough information is given in the disclosure to enable one reasonably skilled in the art to understand when and why such situations occur in the present invention.

With respect to claim 19, it is disclosed that the first cross talk corrected pixel is stored in a memory location. The specification of the application makes this statement in the exact same way that it is stated in the claim (page 17, line 16-17). The specification, however, fails to further elaborate on this statement or give any details such as the location of memory, what type of memory (line buffer, RAM, etc.), how the pixel is retrieved, etc. In order for someone of reasonable skill in the art to fully understand this disclosure, details such as these need to be provided and properly explained.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (703) 305-6301. The examiner can normally be reached on 8:30am - 5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

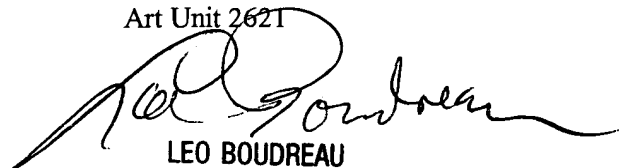
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Patrick L Edwards

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